



PERMANENTLY FIXING A POWERSTROKE

**Our STD Project
Truck Lives!**

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Okay, maybe I'm being a bit wishful when I state "permanently." I know better than to ever expect our longtime Super Duty project, the STD, to be resolved of all engine problems. But I have to imagine that we're not the only guys out there going through 6.0L woes. The Powerstroke 6.0L engine is a good basic design, but it has a few flaws that can make any positive comments lost in an onslaught of cursing and badmouthing that goes hand-in-hand with any recollections of this engine.

On the bright side, this truck has made us learn more about the inner workings of diesel engines—specifically Powerstroke diesel engines—and the entire staff has been able to learn what goes wrong and what fixes there are for the main issues these trucks have. We've seen two major problems that plague most Super Dutys—both of which stem from the oiling system: fuel injection issues (the end result of multiple oiling failure possibilities) and EGR cooler issues in which the cooler plugs up with carbon.

After years of this poor project truck running poorly (since almost brand new), our

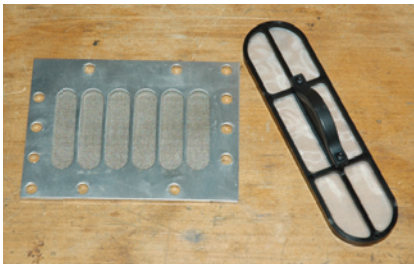
STD is running strong. In fact, I'm going to venture to say we have one of the best running 6.0L engines in the country right now, thanks to the guys (and girl) and Bulletproof Diesel in Mesa, Arizona. They've come out with two new products—an enhanced replacement EGR Cooler Upgrade and their Oil Cooler Upgrade—that, along with some new fuel injectors, have fixed our 6.0L diesel and gotten it to run better than we ever imagined possible. With this truck fixed up so well, what else could go wrong? Well, maybe that variable geometry turbo could go bad...but what are the chances of that?! **OR**



1 Bulletproof Diesel (BPD) started the upgrades by removing the turbo, the factory intake manifold, the EGR cooler, and pulling out the oil cooler block and housing.



2 Here is what the inside of a factory oil cooler looks like. It's no wonder these get plugged up. It all starts with bad oil. You have to be very good about changing your oil in these engines; otherwise these coolers can get easily clogged. And if these coolers don't clog, your oil-driven fuel injectors can get clogged even more easily.

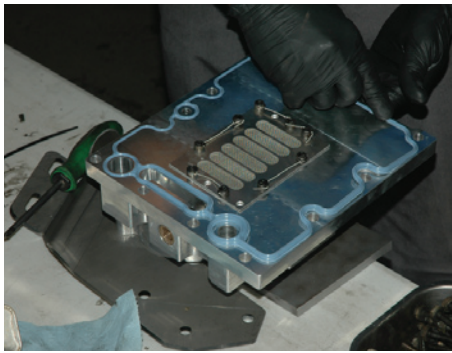


3 Here is the factory HPOP (high-pressure oil pump) filter next to the one BPD provides on the bottom of their oil transfer blocks.



4 Bulletproof's Oil Cooler Upgrade kit comes with three main parts—the billet aluminum oil transfer block, the Fluidyne air-to-liquid cooler, and an 18.5 GPM oil filter. High-pressure Goodyear hose, brackets to mount the cooler and the oil filter, and all the necessary hardware are also included.

Instead of cooling the oil in the substandard factory oil cooler mounted directly on top of the engine, BPD replaces the unit with an oil transfer block and moves the oil filtration off the top of the engine as well. The benefits are better cooling, less clogging, and easier oil filter changes.



5 The BPD billet oil transfer block is really a work of art. It's an outstanding piece with an inlaid seal that seats on the top of the 6.0L engine block. Notice that the BPD HPOP filter's bolts are safety-tied with wire for zero potential of those bolts somehow finding their way into the high-pressure oil pump.



BPD EGR Coolers

6 BPD starts with a stock core that has three channels with radiator fins, much like your engine's radiator. These EGR coolers also have coolant sent through them, much like your engine's radiator. The difference is that the EGR cooler is pulling heat out of the air with the coolant, and your engine radiator is pulling heat out of the coolant with air.

Unfortunately, the fins in the stock EGR coolers get clogged. BPD offers the replacement units with six tubes to allow the exhaust to flow smoothly through the cooler while coolant works around the tubes. The BPD EGR cooler is a much better design, and even one that Ford dealerships recommend to modify their trucks with!

The '03 EGR coolers are round units, while the '04-to-'07 EGR coolers are square units. Their functions are the same.



STD Update

The truck was running so wonderfully. The new Bulletproof EGR cooler and oil cooler kit, along with the eight new injectors, had really made this truck run like a champ. I finally felt relief after 2 years of nail biting every time this truck was driven. The STD had used most of my AAA tows for the year, and I was looking forward to using this truck to tow other trucks, instead of vice-versa.



We got around the Arizona-California border when the turbocharger's bearing went bad and the unit froze. So much for that confident feeling. Oh well, at least I know a guy who knows a guy who can help us out....We should have the truck running in no time.

Permanently Fixing a



7 Here is an '03 EGR cooler and intake manifold (left) next to an '04-to-'07 cooler and manifold (right). There is not much difference.



8 Since the BPD EGR cooler starts as a factory core, fitment is never an issue. BPD was able to get the billet oil transfer block EGR cooler, and manifold back in the truck before the turbo was set. If you've worked on these engines before, you know that disassembling and reassembling these engines is a slow process.

Once the turbo bracket and turbo have been reinstalled, the Goodyear 3/4-inch high-pressure lines and 12 JIC fittings were screwed onto the BPD oil transfer block and routed around anything that might burn the lines (in other words, don't let these lines rest on the turbo in any way).



OFRP-100300-STD-12 DELETE



OFRP-100300-STD-22 Brad- delete if necessary
We just wanted to say thanks again to Ken and Gen Neal, Justin and the rest of the crew at Bulletproof Diesel that helped get our Super Duty project truck running once more. They worked into the late hours of the night to make sure we finished up the truck in time to make it back to California before morning. Thanks again, guys.

Powerstroke



9 The BDP oil cooler comes with a bracket that sandwiches in between the bumper and the frame horns, making installation rather easy on conventional 6.0L.

Of course, we had a custom bumper, so Ken Neal of Bulletproof Diesel modified a bracket to mount onto our oil cooler on the A/C condenser. It worked rather well, and this bracket will likely have to be what you use if you have a custom bumper and winch.



10 With the engines reassembled, Justin Aguirre routed the high-pressure Goodyear hose through the engine compartment to our cooler and to the giant remote oil filter.



11 Since we did not use a conventional factory-style bumper, BPD had to make a custom bracket to hold our remote oil filter. This is basically the same place the supplied BPD bracket puts the remote 18.5 GPM oil filter.



12 To really top it off, our 6.0L Powerstroke engine was suffering from four bad fuel injectors as well. Justin Aguirre replaced the injectors with eight new ones since there's not much sense in improving your oiling system if you leave half your engine not firing. And since these injectors are oil-driven, it was good to add the Bulletproof Oil Cooler Upgrade at the same time as the new injectors.

Source

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